

Synthetic Organic Compounds in Freshwater Tissue and Marine Tissue

Groups associated with this category are defined in the following compound lists:

[Organochlorine Pesticides](#)
[Organotins](#)
[Polybrominated Diphenyl Ethers](#)
[Organophosphate Pesticides](#)
[Polynuclear Aromatic Hydrocarbons](#)
[Polychlorinated Biphenyls](#)

Terms appearing in the tables are defined in the [Surface Water Ambient Monitoring Program Quality Assurance Program Plan](#), which contains a glossary (Appendix E), as well as a list of abbreviations and acronyms (Appendix F).

Table 1: Quality Control¹: Synthetic Organic Compounds in Freshwater Tissue and Marine Tissue²

Laboratory Quality Control	Frequency of Analysis	Measurement Quality Objective
Tuning³	Per analytical method	Per analytical method
Calibration	Initial method setup or when the calibration verification fails	<ul style="list-style-type: none"> Correlation coefficient ($r^2 > 0.990$) for linear and non-linear curves If RSD < 15%, average RF may be used to quantitate; otherwise use equation of the curve First- or second-order curves only (not forced through the origin) Refer to SW-846 methods for SPCC and CCC criteria³ Minimum of 5 points per curve (one of them at or below the RL)
Calibration Verification	Per 12 hours	<ul style="list-style-type: none"> Expected response or expected concentration $\pm 20\%$ RF for SPCCs = initial calibration³
Laboratory Blank	Per 20 samples or per analytical batch, whichever is more frequent	<RL for target analytes
Reference Material	Per 20 samples or per analytical batch (preferably blind)	70-130% recovery if certified; otherwise, 50-150% recovery
Matrix Spike	Per 20 samples or per analytical batch, whichever is more frequent	50-150% or based on historical laboratory control limits (average $\pm 3SD$)
Matrix Spike Duplicate	Per 20 samples or per analytical batch, whichever is more frequent	50-150% or based on historical laboratory control limits (average $\pm 3SD$); RPD < 25%
Surrogate	Included in all samples and all QC samples	Based on historical laboratory control limits (50-150% or better)
Internal Standard	Included in all samples and all QC samples (as available)	Per laboratory procedure

**Table 1: Quality Control¹: Synthetic Organic Compounds in Freshwater Tissue and Marine Tissue²
(continued)**

Field Quality Control	Frequency of Analysis	Measurement Quality Objective
Field Duplicate	5% of total project sample count	Per method
Field Blank, Travel Blank, Equipment Blank	Per method	<RL for target analytes

¹ Unless method specifies more stringent requirements; ELISA results must be assessed against kit requirements

² All detected analytes must be confirmed with a second column, second technique, or mass spectrometry

³ Mass spectrometry only

Table 2: Sample Handling: Synthetic Organic Compounds in Freshwater Tissue and Marine Tissue¹

Analyte	Recommended Container ²	Recommended Preservation	Required Holding Time ³
Organochlorine Pesticides Organophosphate Pesticides Organotins Polynuclear Aromatic Hydrocarbons Surfactants⁴	P, G	Cool to ≤6 °C within 24 hours, then freeze to ≤-20 °C	1 year; samples must be extracted within 14 days of collection or thawing and analyzed within 40 days of extraction
Polybrominated Diphenyl Ethers Polychlorinated Biphenyls (as Congeners/Aroclors)	P, G	Cool to ≤6 °C within 24 hours, then freeze to ≤-20 °C	None

¹ Fish to be reported in wet weight; all other tissues to be reported in dry weight

² "P" is polyethylene; "G" is glass

³ Each "Required Holding Time" is based on the assumption that the "Recommended Preservation" (or a method-mandated alternative) has been employed. If a "Required Holding Time" for filtration, preservation, preparation, or analysis is not met, the project manager and SWAMP Quality Assurance Officer must be notified. Regardless of preservation technique, data not meeting the "Required Holding Time" will be appropriately flagged in the SWAMP database.

⁴ It is recommended that surfactants be stored in the dark

Table 3: Corrective Action: Synthetic Organic Compounds in Freshwater Tissue and Marine Tissue

Laboratory Quality Control	Corrective Action
Calibration	Recalibrate the instrument. Affected samples and associated quality control must be reanalyzed following successful instrument recalibration.
Calibration Verification	Reanalyze the calibration verification to confirm the result. If the problem continues, halt analysis and investigate the source of the instrument drift. The analyst should determine if the instrument must be recalibrated before the analysis can continue. All of the samples not bracketed by acceptable calibration verification must be reanalyzed.
Laboratory Blank	Reanalyze the blank to confirm the result. Investigate the source of contamination. If the source of the contamination is isolated to the sample preparation, the entire batch of samples, along with the new laboratory blanks and associated QC samples, should be prepared and/or re-extracted and analyzed. If the source of contamination is isolated to the analysis procedures, reanalyze the entire batch of samples. If reanalysis is not possible, the associated sample results must be flagged to indicate the potential presence of the contamination.
Reference Material	Reanalyze the reference material to confirm the result. Compare this to the matrix spike/matrix spike duplicate recovery data. If adverse trends are noted, reprocess all of the samples associated with the batch.
Matrix Spike	The spiking level should be near the midrange of the calibration curve or at a level that does not require sample dilution. Reanalyze the matrix spike to confirm the result. Review the recovery obtained for the matrix spike duplicate. Review the results of the other QC samples (such as reference materials) to determine if other analytical problems are a potential source of the poor spike recovery.
Matrix Spike Duplicate	The spiking level should be near the midrange of the calibration curve or at a level that does not require sample dilution. Reanalyze the matrix spike duplicate to confirm the result. Review the recovery obtained for the matrix spike. Review the results of the other QC samples (such as reference materials) to determine if other analytical problems are a potential source of the poor spike recovery.
Internal Standard	Check the response of the internal standards. If the instrument continues to generate poor results, terminate the analytical run and investigate the cause of the instrument drift.
Surrogate	Analyze as appropriate for the utilized method. Troubleshoot as needed. If no instrument problem is found, samples should be re-extracted and reanalyzed if possible.
Field Quality Control	Corrective Action
Field Duplicate	Visually inspect the samples to determine if a high RPD between results could be attributed to sample heterogeneity. For duplicate results due to matrix heterogeneity, or where ambient concentrations are below the reporting limit, qualify the results and document the heterogeneity. All failures should be communicated to the project coordinator, who in turn will follow the process detailed in the method.
Field Blank, Travel Blank, Equipment Blank	Investigate the source of contamination. Potential sources of contamination include sampling equipment, protocols, and handling. The laboratory should report evidence of field contamination as soon as possible so corrective actions can be implemented. Samples collected in the presence of field contamination should be flagged.